

AIR FORCE DOCTRINE PUBLICATION 3-72

NUCLEAR OPERATIONS



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FOREWORD

The United States Air Force's (USAF's) nuclear operations stand as a vital component of the nation's defense posture. The gravity of nuclear operations derives from the catastrophic consequences of nuclear warfare, which demands an unwavering commitment to safety, security, and strict adherence to protocol. The USAF's nuclear enterprise is built upon a foundation of meticulous planning, rigorous training, and unrelenting vigilance to ensure nuclear weapons' awesome power is handled with the respect and caution it deserves.

Nuclear operations are unique due to the technological sophistication of the weapon systems themselves, as well as the complex geopolitical and strategic considerations that underpin their employment. Nuclear deterrence, a cornerstone of national security policy, relies on the credible threat of nuclear retaliation to deter aggression, making the USAF's nuclear capabilities a critical component of the nation's deterrent posture. A credible nuclear deterrent is crucial for maintaining national security to prevent threats without using nuclear weapons.

Since nuclear operations have the potential to simultaneously achieve effects at the strategic, operational, and tactical levels, the conduct of nuclear operations is strictly controlled to ensure a unified effort using all instruments of national power. The decision to employ nuclear weapons is a political one, made by national leadership to support national objectives. It can also lead to unintended consequences, such as escalation or long-term deterioration of relations with other countries. Therefore, the decision to execute nuclear operations requires consideration of the significant physical, political, and psychological effects nuclear weapons create.

Air Force Doctrine Publication (AFDP) 3-72, *Nuclear Operations*, serves as a foundational resource for understanding USAF nuclear operations, providing a comprehensive framework for Airmen to operate within.

CHAPTER 1: INTRODUCTION TO NUCLEAR OPERATIONS

The United States Air Force's (USAF's) nuclear capabilities, as part of the joint force, are a critical element of national defense. Nuclear operations activities are conducted across the competition continuum with mission partners. These activities include nuclear deterrence, responding to a crisis involving nuclear weapons, nuclear strike, assessing the effects of a nuclear strike, and transitioning to the next operation.

The use of nuclear weapons by an adversary would fundamentally alter a conflict, risking uncontrolled escalation and significant strategic consequences. Therefore, the United States' (US) nuclear forces are designed to deter strategic attacks, including nuclear weapons employment at any scale. Deterring nuclear attack (both large-scale and limited) on the US homeland, our allies, and our partners is the highest priority for US nuclear forces.¹ Nuclear capabilities deter adversaries from leveraging the threat of nuclear escalation to achieve their objectives.

AIR FORCE NUCLEAR OPERATIONS

To present unique nuclear capabilities, the USAF organizes, trains, equips, and sustains nuclear forces in support of national security objectives. Airmen are responsible for maintaining a safe, secure, and effective nuclear deterrent and must be ready to provide flexible nuclear capabilities should the President decide to employ nuclear weapons. Nuclear capabilities are an element of the USAF core function of global precision attack and support three of the principal roles stated in Joint Publication (JP) 3-72, *Joint Nuclear Operations*:²

- ★ Deter strategic attack.
- ★ Assure allies and partners.
- ★ Achieve US objectives, if deterrence fails.

DETER STRATEGIC ATTACK

As part of the US nuclear enterprise, USAF nuclear forces contribute to deterrence by presenting a credible threat of unacceptable counteraction, thereby ensuring the cost of an attack outweighs any potential gains. They integrate with conventional and nuclear joint forces to support deterrence, providing tailored options for the President to achieve objectives. By doing so, nuclear operations increase the costs of attacks for adversaries and strengthen regional nuclear deterrence with allies and partners.

¹ For additional information on the purpose of nuclear forces in US strategy, see JP 3-72, *Joint Nuclear Operations*.

² For additional information on global precision attack, see AFDP 3-0, *Operations*.

Deterrence is the prevention of action by the existence of a credible threat of unacceptable counteraction and/or belief the cost of action outweighs the perceived benefits.³ Nuclear forces can be used to deter a range of threats, including conventional and nonnuclear ones. In support of nuclear operations, forces may be tied to complex and dynamic situations requiring integration across multiple domains and environments.

- ★ **Nuclear deterrence** is the bedrock of US national security. It serves as the backstop and foundation of US national defense, the defense of US allies and partners, and underwrites every US military operation. Nuclear deterrence comprises of nuclear weapons and delivery systems, nuclear command, control, and communications (NC3), and the people and infrastructure that support it. The US nuclear arsenal serves to deter all forms of strategic attack. Should nuclear deterrence fail, the US would consider the use of nuclear weapons in extreme circumstances to defend the vital interests of the nation, its allies, or partners.
- ★ **Extended deterrence** is a commitment to deter and, if necessary, respond across the spectrum of potential nuclear and nonnuclear scenarios in defense of allies and partners. Extended deterrence is less about retaliation and more about posturing to convince an enemy they are unlikely to achieve the political and military objectives behind any attack on the US, its allies, or its partners. Extended deterrence is sometimes described as providing a nuclear umbrella over allies and partners. Through alliances and treaties, our extended deterrence strategy provides a nuclear umbrella to friendly and allied nations. The nuclear umbrella assures allies and partners of our commitment to their security and serves as a nonproliferation tool by obviating their need to develop and field their own nuclear arsenals.

Effective deterrence relies on the synergy of **credibility**, **capability**, and **communication** to influence adversary behavior.

- ★ **Credibility** entails sustaining a perception that the US has the will to execute proposed actions. The credibility of deterrence is contingent upon how the adversary perceives it. To achieve effective deterrence, credibility is reliant on possessing a compelling capability to carry out a range of both nuclear and nonnuclear options and demonstrating a readiness to employ these options.
- ★ **Capability** consists of having the means to influence behavior. The US possesses a range of flexible nuclear and nonnuclear capabilities that should make potential adversaries believe they will fail to achieve their objectives if they attack the US, its allies, or partners. Additionally, the US should ensure any such attack would also carry with it a credible risk of severe and unacceptable consequences for the attacker. Nuclear force capabilities should be diverse, flexible, adaptable, effective, resilient, responsive, and survivable. A safe, secure, and effective deterrent necessitates our nuclear forces be made up of specially trained and extremely competent operators, maintainers, and security forces personnel.

³ For additional information on deterrence, see JP 3-0, *Joint Campaigns and Operations*.

- ★ **Communication** consists of transmitting the intended message to the desired audience. For effective deterrence, this communication should articulate the US resolve to employ capabilities that deny the benefits of adversary action and impose unacceptable costs on them. Messaging opportunities are not exclusive to verbal or written statements but can be demonstrated through weapon system tests, investment, nuclear exercises, alert posturing, and shows of force. Adversaries should believe the US has both the will and the ability to use nuclear weapons for deterrence to work.

ASSURE ALLIES AND PARTNERS

Assurance is complementary to extended deterrence. Where the objective of deterrence is to influence the decision-making of an adversary, assurance involves easing the fears and sensitivities of allies and partners. It is distinct from extended deterrence in that assurance often takes the form of security cooperation, combined exercise, and forward stationing of US forces. US assurance of allies and partners is also conveyed through alliances, treaties, and international agreements. For example:

- ★ The *Treaty of Mutual Cooperation and Security Between Japan and the United States of America* specifies a commitment to defense cooperation, regular consultations, and peace and security in the Far East.⁴
- ★ The *Mutual Defense Treaty Between the United States and the Republic of Korea* declares the countries' shared determination to defend themselves and preserve peace and security in the Pacific area.⁵
- ★ The *North Atlantic Treaty* reaffirms the goal of promoting stability, uniting efforts for collective defense, and for the preservation of peace and security among North Atlantic Treaty Organization (NATO) partners.⁶

Deterrence and assurance are not mutually exclusive from one another. Shows of force can be employed to shape both allied and adversary decision-making. A show of force is defined as "an operation planned to demonstrate US resolve that involves increased visibility of US deployed forces in an attempt to defuse a specific situation that, if allowed to continue, may be detrimental to US interests or national objectives."⁷ The USAF contributes to assurance through shows of force, such as deploying long-range bombers or dual-capable aircraft (DCA) to tense regions, which signal commitment to allies and demonstrate capability to adversaries.

In light of a rapidly devolving security environment, the US should remain prepared to strengthen its assurance measures to maintain regional security architectures and deter aggression. As threats increase, allies and partners may seek concrete reassurances

⁴ See the *Treaty of Mutual Cooperation and Security Between Japan and the United States of America*, for additional information.

⁵ See the *Mutual Defense Treaty Between the United States and the Republic of Korea*, for additional information.

⁶ See the *North Atlantic Treaty*, for additional information.

⁷ For additional information on shows of force, see JP 3-0, *Joint Operations*.

from the US. Consequently, this may lead to increased pressures on force structure and the necessity for specific capability enhancements. Strengthening these relationships is critical to American national security, as they help deter aggression regionally and prevent threats from directly impacting the US homeland.

ACHIEVE US OBJECTIVES, IF DETERRENCE FAILS

If deterrence fails, the President may authorize the use of nuclear weapons to conclude any conflict with the lowest level of damage possible, securing the most favorable terms achievable for the US and its allies and partners. The USAF prepares its nuclear forces to provide the President with credible response options to achieve US objectives and restore deterrence.

Nuclear weapons provide the President a method of managing escalation throughout the continuum of conflict, allowing for flexible cost imposition on an adversary to control escalation. The high level of commitment required for the use of nuclear weapons by the US is a tangible demonstration of our resolve and is likely to affect our ability to defeat the will of an enemy or achieve US objectives.

EMPLOYMENT CONSIDERATIONS

The employment of nuclear weapons constitutes a form of strategic attack. **Strategic attack** is an offensive action against a target-whether military, political, economic, or other-that is specifically selected to achieve national or military strategic objectives.⁸ These attacks seek to weaken the adversary's ability or will to engage in or escalate conflict and may achieve strategic objectives without necessarily achieving operational objectives as a precondition. A joint force commander (JFC) can authorize strategic attack. However, only the President can authorize strategic attack employing nuclear weapons. Regardless of how they are used, the employment of nuclear weapons yields effects at the strategic level.⁹

⁸ See JP 3-0, *Joint Campaigns and Operations*, for additional information.

⁹ For additional information on strategic attack, see AFDP 3-02, *Strategic Attack*.

Atomic Bombings During World War II

“The atomic bombings considerably speeded up [the] political maneuvering within the [Japanese] government. This in itself was partly a morale effect since there is ample evidence that members of the Cabinet were worried by the prospect of further atomic bombings, especially on the remains of Tokyo. The bombs did not convince the military that defense of the home islands was impossible. It did permit the Government to say, however, that no army without the weapon could possibly resist an enemy who had it, thus saving “face” for the Army leaders and not reflecting on the competence of Japanese industrialists or the valor of the Japanese soldier. In the Supreme War Guidance Council voting remained divided, with the war minister and the two chiefs of staff unwilling to accept unconditional surrender. There seems little doubt, however, that the bombing of Hiroshima and Nagasaki weakened their inclination to oppose the peace group.”

“A quip was current in high government circles at this time that the atomic bomb was the real Kamikaze, since it saved Japan from further useless slaughter and destruction.”

—US Strategic Bombing Survey, The Effects of the Atomic Bombings of Hiroshima and Nagasaki, 19 June 1946

WEAPON EFFECTS

The destruction caused by a nuclear weapon depends upon several factors such as weapon design and yield, location and height of burst, and weather. A nuclear detonation’s operational impact varies based on its blast and heat, the subsequent electromagnetic pulse (EMP), or more far-reaching effects, depending on the factors discussed above. These effects would immediately impact enemy forces, logistics, and command and control (C2). Communications and computer capabilities will be severely impacted by EMP. This is an example of an operational effect that could lead to a long-term, strategic impact if the enemy is unable to completely restore those capabilities. Another operational effect with strategic implications is radiation. Radiation limits the effectiveness of enemy forces as they take protective measures and may also render enemy territory uninhabitable for an extended timeframe. Other significant effects may include extreme overpressure, dust, and debris. Planners should consider all these factors, combined with the political and military objectives, when developing courses of action.

The use of nuclear weapons to repel enemy forces in friendly territory will typically lead to long-term effects that may be unacceptable. Movement through an area that has experienced a nuclear detonation will be slow because significant protective measures are required. Nuclear-hardened communications and information systems are designed to be survivable in a nuclear environment and should be available.

There are psychological effects associated with nuclear weapons that go beyond physical destruction. Despite the significant difference in physical effects between nuclear and conventional weapons, the use of nuclear weapons will impose additional implications. It is difficult to determine exactly what those psychological effects might be. While limited nuclear response options can play an important role in restoring deterrence following limited adversary nuclear escalation, it may have unintended effects. When planning a nuclear option, it is important to consider the potential psychological impact as well as the enemy's ability to escalate.

Nuclear weapon use may also have immediate and long-term undesired effects on relations with other countries. In addition, the use of nuclear weapons may be unacceptable to allies or other friendly nations. Their support for the conflict may be lost, and long-term relations may be damaged. The President will make the ultimate decision on nuclear weapons employment. Military planners and commanders should understand these factors, too, so they can present military options in the full context of their effects rather than in isolation.

NUCLEAR OPERATIONS IN SUPPORT OF THEATER OBJECTIVES

The US employs extended deterrence daily to project deterrent effects in key regions across the globe. These forward-deployed assets, combined with the global reach of continental US (CONUS)-based nuclear forces, provide theater-level assurance to allies abroad and deterrence to adversaries. Should deterrence fail, USAF forces operating in a theater environment may be called upon to use nuclear weapons to obtain theater-level objectives. While the use of nuclear weapons will affect an ongoing engagement between friendly and enemy forces, their use should help to achieve the political goals of the operation.

To achieve theater-level objectives, CCDRs may request the use of CONUS-based intercontinental ballistic missiles (ICBMs) or theater-level nuclear weapons using either long-range bombers or fighters designated as DCA capable of both nuclear and conventional operations. Cruise missiles allow for standoff attacks, which puts crew members at minimal risk and may deny an adversary significant tactical warning. Gravity bombs allow more flexibility in employment but put crew members at direct risk in a high-threat environment.

Readiness and training requirements for USAF nuclear forces in support of combatant commands (CCMDs) are determined by the respective CCDR with advice from the air component commander. Units supporting the nuclear mission must be appropriately trained on the full spectrum of nuclear support to include safety, security, and handling of nuclear weapons and components. Nuclear generation to cover a nuclear tasking is a significant paradigm shift for those operating and supporting these forces. Additionally, nuclear generation removes assets from conventional tasking. Due to the operational tempo of such forces, training should be carefully balanced between the competing conventional and nuclear demands.

Since the US is unlikely to unilaterally engage in a major conflict, the use of theater-level nuclear weapons likely would occur while working in conjunction with other nations'

militaries. When operating with members of treaty organizations, standardized nuclear policies may already exist. When functioning as part of a short-term coalition, however, common procedures for coalition forces should be developed during that conflict.

CHAPTER 2: AIR FORCE NUCLEAR FORCES

The USAF contributes to the nuclear triad and DCA, as well as nuclear infrastructure and support. Triad and DCA forces include nuclear delivery and weapon systems. Nuclear infrastructure and support include NC3 capabilities, personnel, security, maintenance, and air mobility. The credibility of the USAF's nuclear program is founded on the skill of its combat crews and support personnel. Realistic training, high standards for technical competence, strong analytical skills, and personal reliability are key force shaping elements.

UNITED STATES AIR FORCE NUCLEAR TRIAD ELEMENTS

The Department of Defense's (DoD's) strategic nuclear force, comprising ICBMs, long-range bombers, and submarine-launched ballistic missiles (SLBMs), forms a robust "triad." Each component strengthens the nuclear posture of the US through distinct capabilities, while collectively mitigating the risk of a single system's vulnerability or an adversary's technological breakthrough jeopardizing overall US strategic advantage.

The USAF manages and operates two distinct elements of the US nuclear triad: ICBMs and long-range bombers. Each USAF nuclear-capable platform offers distinct advantages. ICBMs are the most responsive, offering prompt, on-alert capability combined with dispersed fielding that complicates an adversary's calculus and provides for a secure second strike. Long-range bombers provide leadership multiple messaging options leading up to and during a crisis. These bombers demonstrate resolve, capabilities, and willingness to escalate, thereby deterring aggression or coercing a favorable outcome. Bombers provide flexibility with the ability to be recalled prior to employment. This allows for overt posturing and escalation management during all stages of conflict.

Intercontinental Ballistic Missiles. The ICBM force is the only US nuclear platform on continuous alert. It provides the President with the most responsive options in the US nuclear arsenal. ICBMs provide flexibility in both pre-planned and adaptable response options. Their ability to rapidly retarget complicates an enemy's targeting calculus and undermines any perceived chances of conducting a successful first strike. With dispersed basing, unparalleled responsiveness, and robust C2, the ICBM force creates an extraordinarily high threshold for a successful, large-scale, conventional, or nuclear attack on US nuclear forces. The USAF operates hundreds of ICBMs (each one capable of housing multiple nuclear warheads) that are spread across thousands of square miles in hardened, underground silos. Combined with its "always on alert" posture, ICBMs serve to assure the President always maintains the capability to respond to any imminent attack.

Long-Range Bombers. USAF long-range bombers carrying nuclear gravity bombs or nuclear air-launch cruise missiles provide the most flexible and visual means of conducting both nuclear, deterrence, and assurance operations. Long-range bombers' ability to deploy in support of crises around the world provides both Ally and partner nations and adversaries a visible signal of US military resolve and intent. Unlike an ICBM, whose launch cannot be canceled once executed, a bomber armed with nuclear weapons can be recalled up until the point of weapons release. Furthermore, long-range bombers

contribute to operational flexibility. Not only are they capable of carrying a nuclear payload but they are also capable of deploying several types of conventional ordnance, allowing them to be customized and tailored for a range of mission requirements to provide the President and CCDRs with a range of global strike options.

DUAL-CAPABLE AIRCRAFT

DCA maintained by the US and select NATO Allies can deliver nuclear or conventional weapons in support of US national security interests and in support of NATO. These nuclear-capable fighter aircraft offer a unique capability against regional threats while assuring Allies and providing a clear and visible signal to potential adversaries of US commitment to NATO. The sole authority to transfer US nuclear weapons for NATO employment remains with the US President.

Compared to long-range bombers, DCA are theater-level assets with shorter ranges and smaller payload capacities. This limits their ability to project power over long distances or deliver large amounts of ordnance, which are characteristic of USAF nuclear triad elements.

NUCLEAR INFRASTRUCTURE AND SUPPORT

Effective infrastructure and support are critical for USAF nuclear forces to be successful. Nuclear support structures must be organized, sized, and maintained to support all likely nuclear operations. Nuclear support includes such things as scheduled maintenance and support of current operations; generating bombers and ICBMs for nuclear alert in a crisis; deployment into a theater of operations, as required; and dispersal and reconstitution actions (before and after hostilities). Support structures should operate effectively throughout the competition continuum, including nuclear operations. When considering the possibility of nuclear options, planners should review the support issues involved and ensure all support requirements are met before moving weapons to new locations.

Nuclear Command, Control, and Communications. NC3 is the facilities, equipment, communications, procedures, and personnel that enable presidential nuclear direction to be carried out. This vital component of nuclear operations is discussed in detail in Chapter 3, *Commanding Nuclear Operations*.

Personnel. Because nuclear systems and facilities are lucrative targets, air base personnel may encounter chemical, biological, radiological, and nuclear (CBRN) weapons effects. US forces should be capable of responding to and executing operations in a CBRN environment with minimal degradation of force effectiveness. Implementing the principles of CBRN defense—avoidance, protection, and decontamination—will help preserve the fighting capability of the forces.

Security. Security is an important concept in day-to-day support, as well as in dispersal and deployment operations. Weapons are particularly vulnerable when in transit or deployed under ad hoc field conditions, so appropriate measures should be taken to protect them. Planners and commanders should consider, among other things, the current threat level and local community concerns.

Maintenance, Storage, and Transportation. Maintenance, storage, and transportation of nuclear weapons and their delivery systems require specially trained and qualified personnel. The decision to deploy or disperse nuclear weapons also requires the deployment or mobilization of maintenance personnel, who typically require their facilities separate from conventional munitions. Planners need to incorporate such unique support requirements when planning for nuclear operations away from an established infrastructure.

Air Mobility. Air mobility uniquely enables nuclear operations through air refueling (AR) and airlift. AR supports nuclear operations through bomber and C2 support. AR provides bombers with both extended range and flexibility to be redirected and hold a variety of targets at risk. AR provides enhanced flight endurance for the National Airborne Operations Center (NAOC) enabling the President and Secretary of Defense (SecDef) to continue directing military action from an airborne platform.¹⁰

Airlift missions supporting nuclear weapons logistic operations are classified as Prime Nuclear Airlift Force (PNAF) or Emergency Nuclear Airlift Operations (ENAO). PNAF provides the critical air transportation component of the planned logistical movement of nuclear weapons and related materiel positioned around the world and is necessary to facilitate international treaties and weapons life-cycle sustainment requirements. When directed, any airlift asset can augment this capability via ENAO to enable DoD custody of nuclear weapons during emergency operations.¹¹

¹⁰ For additional information on Air Refueling Nuclear Operations Support, see AFDP 3-36, *Air Mobility Operations*.

¹¹ For additional information on Prime Nuclear Airlift Force and Emergency Nuclear Airlift Operations, see AFDP 3-36, *Air Mobility Operations*.

CHAPTER 3: COMMANDING NUCLEAR OPERATIONS

Nuclear forces are assigned to Commander, US Strategic Command (CDRUSSTRATCOM). Commander, US Transportation Command (CDRUSTRANSCOM) supports USSTRATCOM with AR and airlift. Nonstrategic nuclear forces are assigned to other CCMDs. The respective Service components exercise administrative control (ADCON) of forces and personnel in support of CCCR priorities.

ORGANIZATION OF NUCLEAR FORCES

The USAF employs forces for US Strategic Command (USSTRATCOM) through the joint force air component commander (JFACC). While the JFACC has tactical control (TACON) of assigned or attached forces for nonnuclear operations, this is not the case for nuclear operations. Forces assigned to the CDRUSSTRATCOM include ICBMs and long-range bombers. CDRUSSTRATCOM delegates operational control (OPCON) of assigned and attached Air Force forces to the USAF component commander (the commander, Air Force forces [COMAFFOR]) assigned to CDRUSSTRATCOM, e.g., Commander, Air Force Global Strike Command (AFGSC/CC). AFGSC/CC's responsibilities are further divided into operational branch authority as Commander, Air Forces Strategic (COMAFSTRAT), and administrative branch authority as AFGSC/CC. COMAFSTRAT exercises OPCON of assigned and attached Air Force forces as delegated by the CDRUSSTRATCOM. Thus, for nuclear operations, COMAFSTRAT is a force provider.

The AFGSC/CC is further designated as the JFACC to CDRUSSTRATCOM. As USSTRATCOM JFACC, AFGSC/CC provides daily monitoring of those joint forces made available, C2 in peacetime and during nonnuclear global strike operations to accomplish tasked missions. JFACC authorities and responsibilities differ from those described in the doctrine for nonnuclear operations in part because nuclear planning and nuclear C2 are not conducted at the component level. As the USAF component commander to CDRUSSTRATCOM, AFGSC/CC exercises OPCON over assigned and attached Air Force forces as delegated by CDRUSSTRATCOM.¹²

The AR and airlift fleets of Air Mobility Command (AMC) supporting USSTRATCOM are assigned to USTRANSCOM. AMC is the USAF Service component command to USTRANSCOM. The Commander, Air Mobility Command (COMAMC), is normally delegated OPCON of assigned forces. Tankers are also assigned to Commanders United States Indo-Pacific Command and United States European Command. In addition, tankers are assigned to the Air National Guard and USAF Reserve and, when activated, are assigned to USTRANSCOM.¹³

COMAFSTRAT and USSTRATCOM JFACC exercise C2 over ICBMs, bombers, and other assigned aircraft through the Joint-Global Strike Operations Center (J-GSOC) and its 608th Air Operations Center (AOC), while the AMC/CC exercises C2 over tanker and

¹² For additional information on AFGSC and organizational responsibilities, see AFI 13-500, *Air Force Nuclear Mission Responsibilities*.

¹³ For additional information on commanding Mobility Air Forces, see AFDP 3-36, *Air Mobility Operations*.

airlift aircraft through the 618 AOC. The 608 AOC and 618 AOC have a coordinating relationship. These unique delegations of command authorities are codified in two annually revised USSTRATCOM operation orders (OPORDs).

AIR FORCE ORGANIZATION FOR NUCLEAR OPERATIONS

Subordinate to AFGSC are two numbered Air Forces (NAFs), Eighth Air Force (8 AF) and Twentieth Air Force (20 AF). These NAF commanders exercise ADCON over their respective forces. The Commander, 8 AF (8 AF/CC), is dual-hatted as Commander, J-GSOC.

USAF forces are usually arrayed internally into wings, groups, and squadrons as necessary to provide an internal span of control. Unlike traditional USAF organizational models, nuclear operations are not aligned under an air expeditionary task force.¹⁴ However, bomber task force missions occur on a routine basis, performing nuclear deterrence operations in support of campaign or contingency plan objectives.

AFGSC/CC via 8 AF/CC exercises ADCON of NAOC aircraft (E-4B) assigned to the 595th Command and Control Group, while CDRUSSTRATCOM exercises OPCON of non-alert NAOC aircraft and the Chairman, Joint Chiefs of Staff (CJCS) exercises control of the alert NAOC.

The Commander, US Air Forces Europe (USAFE/CC), provides DCA to the Commander, US European Command (CDRUSEUCOM). The USAFE/CC is also dual-hatted as the Commander, Allied Air Command to NATO. In the relationship with CDRUSSTRATCOM, CDRUSEUCOM is the supported commander for planning. At the same time, CDRUSEUCOM is the supporting commander for execution. In the employment of nuclear options, CDRUSSTRATCOM has no authority over forces assigned to USAFE/CC.

NUCLEAR COMMAND, CONTROL, AND COMMUNICATIONS

The NC3 system refers to the “means through which Presidential authority is exercised and operational C2 of nuclear operations is conducted. The NC3 system is part of the larger National Leadership Command Capability (NLCC), which encompasses the three broad mission areas of: (1) Presidential and senior leader communications; (2) NC3; and (3) continuity of operations and continuity of government communications.”¹⁵

AFGSC is responsible for lead command management and centralized organize, train, and equip functions of the USAF NC3 weapon system (AN/USQ-225), comprising terminals, radios, direct ancillary communications devices, and support equipment for the execution of NC3. The AFGSC/CC is the single accountable officer for all operational aspects of the USAF nuclear mission in support of USSTRATCOM.

¹⁴ For additional information on an air expeditionary task force, see AFDP 3-0, *Operations*.

¹⁵ For additional information on NC3 systems, see AFI 13-550, *Air Force Nuclear Command, Control, and Communications (NC3)*.

Successful NC3 in all environments, including denied access and stressed operating areas, is an essential element to stabilizing a crisis, deterring attack, and maintaining the safety, security, and effectiveness of nuclear operations. The ability to command, control, and communicate with nuclear forces is a foundational capability of the USAF and undergirds US national defense policy.

Resilient and effective NC3 ensures civilian authorities have the maximum possible decision time in all scenarios. This capability strengthens strategic stability, particularly at lower force levels. It also enables the USAF to employ forces against a target or series of targets promptly. Furthermore, effective NC3 provides civilian authorities with the means to terminate a conflict and avoid further escalation. Additionally, it strengthens the USAF's ability to respond to an attack or series of attacks, even after suffering damage.

Nuclear command and control (NC2) is the exercise of authority and direction by the President, as Commander-in-Chief of the US Armed Forces, through established national command authority lines over nuclear weapons, nuclear weapon systems, and nuclear weapon operations of military forces. NC2 mission essential functions include force management, planning, situation monitoring, decision-making, and force direction. Survivable and enduring NC2 capabilities disseminate warning information and nuclear control orders and add significant resilience to the NC3 system of systems. Resilient NC3 contributes to stability by convincing adversaries they cannot execute an attack against the US or its allies and partners without suffering the consequences of a nuclear response.

NUCLEAR COMMAND AND CONTROL SYSTEM

The President exercises nuclear authority through the NC3. National leaders use NC3 systems to provide themselves with situational awareness, advance warning, and C2 capabilities for nuclear operations. Deterrence, stability, and escalation control require these capabilities to endure during and after a nuclear attack so no adversary is capable of a disarming first strike.¹⁶

POSITIVE CONTROL

The President may direct the use of nuclear weapons through an execution order via the Chairman of the Joint Chiefs of Staff to the CCDRs and, ultimately, to the forces in the field exercising direct control of the weapons.

Execution of these orders through emergency action procedures allows for a timely response to an emergency action message and ensures the directive is valid and authentic. USAF personnel involved in the actual employment of nuclear weapons are intensively and continuously trained and certified in these procedures so they can quickly and accurately respond to the order.

¹⁶ For additional information on NC3 and the National Military Command System (NMCS), see JP 3-72, *Joint Nuclear Operations*.

ORDERS AUTHENTICATION

Cryptologic systems are used to validate the authenticity of nuclear orders to prevent unauthorized employment of nuclear weapons. Access to these systems and codes, and knowledge of these procedures are tightly controlled to prevent access by unauthorized individuals to the means and methods to order or terminate nuclear weapons employment. Once appropriate orders have been sent, weapon system operators must respond promptly using standardized procedures.

CHAPTER 4: NUCLEAR C2 ACTIVITIES

NC2 incorporates the major activities common to all operations: planning, preparing, executing, and assessing. However, due to the sensitive nature of nuclear operations, control is centralized at the highest echelons. Therefore, many C2 activities that may be distributed for conventional operations are conducted at the theater and strategic levels. The following considerations are presented to build an Airman's understanding of NC2 using the USAF model of the C2 process.

PLANNING

USSTRATCOM is tasked by the Joint Strategic Campaign Plan to provide specific support to CCDRs for their nuclear planning. Planning for nuclear operations differs in one important aspect from other forms of joint planning: USSTRATCOM performs detailed planning down to the individual sortie level, and as a result, there is no separate supporting Service component operation plan. (Note: While Airmen should understand planning considerations, the following discussion does not imply this is a USAF component task. Also, note most of the specific details regarding nuclear planning are classified.)

Nuclear operations can either be preplanned against specific targets or adaptively planned against emerging targets. Preplanning provides the opportunity to conduct detailed planning and analysis against targets without the time pressures normally associated with a crisis. Preplanned options maintain centralized control while minimizing response time. Plans provide a variety of targeting options, which allow national leadership the flexibility to achieve objectives. As circumstances change during a conflict, adaptive planning allows leadership to retarget and strike emerging, mobile, or previously unknown targets.

Planning for theater nuclear operations should be integrated into the supported CCDR's plans. This should maximize the desired effects; identify and prioritize intelligence, planning, and force requirements; identify conventional and nuclear acceptable levels of risk; and ensure proper levels of coordination and support necessary for successful mission operations. Liaison teams are assigned to work with the JFC and components in the development of nuclear options. Airmen within theater commands may collaborate on matters of weapon system capabilities and regional issues. Additionally, planners should coordinate with joint and coalition forces to deconflict nuclear weapons effects and prevent friendly fire. Planners and support staffs should continually update senior leaders and inform representatives of coalition forces while maintaining the proper balance of operational security and cohesiveness.

The significant destructive power and other related effects of nuclear weapons demand special precautions. Plans should address possible adversary nuclear employment scenarios and consider situations such as EMP and dispersal of forces versus mass formation. Intelligence should understand an adversary's doctrine and strategy for the use of nuclear weapons, especially whether there is a declared "first use" strategy and when adversary nuclear weapons employment is most likely to occur. Perhaps the most difficult task is planning for escalation control. Understanding adversary interpretation of

US actions and similarly accurate receipt of adversary messaging is crucial to managing escalation control.

Planning efforts should also be reviewed to ensure friendly force commanders do not make the mistake of mirror imaging. This is the application of US values and culture to planning assumptions when anticipating other countries' actions that may lead commanders to wrongly believe an adversary would be willing or even unwilling to use nuclear weapons in any given scenario. Additionally, escalation control relies heavily on each side of a conflict understanding the intent of the other. For example, what one commander believes is an example of showing restraint may be perceived as an escalatory action by the adversary. Rational behavior should be determined through the lens of cultural and historical context to properly anticipate an adversary's response to US nuclear operations.

CONVENTIONAL-NUCLEAR INTEGRATION

Conventional-nuclear integration (CNI) is the ability of the joint/combined force to recognize and survive the use of nuclear weapons, reconstitute critical capabilities, and plan and execute integrated, multi-domain conventional and nuclear combat operations in, around, and through a nuclear environment. Conventional support to nuclear operations is conventional capabilities required to prepare the battlespace to ensure timely delivery of nuclear effects or to enhance or complement nuclear options.

When conducting CNI operations, C2 relationships may be different than those described in Air Force Doctrine Publication (AFDP) 3-0.1, *Command and Control*.¹⁷ For example, CDRUSSTRATCOM could control nuclear bombers while the CCCR with an area of responsibility executes C2 of conventional forces in either a Conventional Conflict with a Nuclear Element or a Conventional Support to Nuclear Operations scenario. While CNI may improve unity of effort, it may pose unity of command challenges.

Finally, commanders of nuclear forces should take coalition perceptions of nuclear operations into account to not risk failure to achieve national strategic objectives when providing national leadership recommendations.

¹⁷ See AFDP 3-0.1, *Command and Control*, for additional information.

Mission Command and Conventional-Nuclear Integration

Mission command underpins the creativity and initiative required to operate in future contested, degraded, or operationally limited (CDO-L) environments. As part of conventional-nuclear integration, the development of Mission Ready Airmen (MRA) using the Agile Combat Employment (ACE) scheme of maneuver enables conventional operations to continue providing support to nuclear operations. These force elements conducting ACE should expect to lose connectivity with operational C2. Necessary command relationships, authorities, and responsibilities should be identified and established through distributed control in advance of conventional-nuclear integration operations. Armed with shared understanding, subordinates can make effective decisions consistent with the commander's intent to protect and preserve the force and generate combat power from areas of no or low contamination even if they have lost contact with higher echelons.

PREPARING

Preparing encompasses the coordinating, refining, and transitioning actions necessary for positive communication and successful execution among superior, subordinate, and parallel forces. Preparing enables a seamless transition from planning to execution that contributes to the overall deterrence effect of nuclear operations. Effective preparation includes rehearsals or exercises to ensure transition activities are understood, inspections and checks to verify readiness, and timely back-briefs to address lessons learned prior to execution. Nuclear preparing activities include the generation of nuclear forces, exercises, and inspections. These activities are continually conducted to present credible and capable forces that are ready to execute.

Global Thunder and Global Lightning

Global Thunder and Global Lightning are annual command-level exercises sponsored by US Strategic Command (USSTRATCOM) and conducted in cooperation with Air Force Global Strike Command and the North American Aerospace Defense Command. These two exercises are key demonstrations of the Air Force's ability to test and validate nuclear command and control and execution procedures. Exercise objectives typically include live communications, and the participation of units assigned or attached to USSTRATCOM during wartime, including USSTRATCOM's airborne command post and external participation from national-level organizations and other combatant commands (CCMDs).

Generation. In conventional operations, the first execution activity is usually generation. However, in nuclear operations, generation is a distinct step of preparing that occurs

before execution. Nuclear generation typically involves configuring aircraft and transitioning aircrew for their nuclear role.

EXECUTING

USAF nuclear capabilities require robust integration with full spectrum operations to enable effective employment within a particular region, account for larger political ramifications, and allow effective operations in a nuclear environment. Nuclear options should integrate with conventional or other nonnuclear operations to enhance effectiveness and minimize collateral effects. The delivery of nuclear weapons may require conventional support in the form of counterair operations, AR, and post-strike assessment. In some scenarios, theater nuclear weapons may be integrated within a larger strike that also includes delivery of conventional ordnance. In other scenarios, CONUS-based bombers may support theater operations. However, all scenarios require careful planning to ensure integration of all capabilities, beyond simple deconfliction of weapons effects.

Nuclear employment is closely coordinated with combined targeting, mutual support, and defense, as well as national strategies and objectives. The options contained therein provide sufficient detail to ensure mutual support and defense suppression. Of particular concern is the timing and deconfliction of weapons. Fratricide, a term of art in nuclear force planning used to denote the diminishment of one weapon's effects by detonation of another, may reduce the effectiveness of the nuclear strike. Planners coordinate between different weapons to ensure they do not conflict. USAF planners and USSTRATCOM liaison teams in a theater of operations should also ensure weapons are deconflicted before being employed to prevent fratricide and friendly fire incidents.

ASSESSING

Commanders and planners should consider the operating environment after a nuclear exchange can be equally inhospitable for friendly forces. Movement through an area that has experienced a nuclear detonation may be slow because significant protective measures are required. Plans for post-attack recovery and reconstitution should not only include an assessment of the success of US strikes, but also an assessment of adversary strikes against US military and civilian facilities. Advanced warning is the most crucial factor in mitigating damage from a nuclear detonation. This advanced warning allows friendly forces and civilians the best chance of getting to shelter and surviving.

US nuclear systems and facilities both in the homeland and overseas are lucrative targets. USAF forces should be capable of responding to and executing operations in a contaminated environment with minimal degradation of force effectiveness. Implementing the principles of CBRN defense—avoidance, protection, and decontamination—should help preserve the fighting capability of forces.¹⁸

¹⁸ For additional information on CBRN, see AFDP 3-40, *Counter Weapons of Mass Destruction (WMD) Operations*, JP 3-40, *Joint Countering Weapons of Mass Destruction*, JP 3-11, *Operations in Chemical, Biological, Radiological, and Nuclear Environments*, and JP 3-41, *Chemical, Biological, Radiological, and Nuclear Response*.

CHAPTER 5: NUCLEAR SURETY

The USAF implements a stringent nuclear surety program to ensure nuclear weapons and their components do not become vulnerable to loss, theft, sabotage, damage, or unauthorized use. All individuals involved with nuclear weapons and nuclear weapon components are responsible for the safety and security of those devices at all times.

“The purpose of the USAF Nuclear Weapons Surety Program is to incorporate maximum nuclear weapons surety, consistent with operational requirements, from weapon system development to target or dismantlement.”¹⁹ This program applies to materiel, personnel, and procedures that contribute to the safety, security, and control of nuclear weapons, thus assuring no nuclear accidents, incidents, loss, or unauthorized or accidental use. The USAF continues to pursue safer, more secure, and more reliable nuclear weapons consistent with operational requirements.

Adversaries as well as allies and partners should be highly confident of the USAF’s ability to secure nuclear weapons from accidents, theft, loss, and accidental or unauthorized use. This commitment to precise and reliable nuclear operations is a cornerstone of the credibility of deterrence.

Four DoD nuclear weapon system surety standards provide positive measures to:

- ★ Prevent nuclear weapons involved in accidents or incidents, or jettisoned weapons, from producing a nuclear yield.
- ★ Prevent **deliberate** pre-arming, arming, launching, or releasing of nuclear weapons, except upon execution of emergency war orders or when directed by competent authority.
- ★ Prevent **inadvertent** pre-arming, arming, launching, or releasing of nuclear weapons in all normal and credible abnormal environments.
- ★ Ensure adequate security of nuclear weapons.²⁰

Whether working with CONUS-based nuclear forces or conducting theater nuclear operations, commanders should ensure the safety, security, and reliability of their weapons and associated components. While the appropriate infrastructure already exists at bases with nuclear forces, CCDRs should consider the additional needs incurred if nuclear weapons are deployed into their areas of responsibility.

Nuclear surety is the capstone construct that contains nuclear safety, security, and reliability programs, each of which is summarized below.

¹⁹ For additional information on Nuclear Surety, see Department of the Air Force Instruction (DAFI) 91-101, *Air Force Nuclear Weapons Surety Program*.

²⁰ For additional information on DoD nuclear weapon system surety standards, see DoD Directive (DoDD) 3150 .02, *DoD Nuclear Weapons Surety Program* and Department of Defense Manual (DoDM) 3150.02, *DoD Nuclear Weapons System Safety Program Manual*.

SAFETY

All individuals involved with nuclear weapons are responsible for the safety of those devices. Because of the destructive potential of these weapons and the possibility their unauthorized or accidental use might lead to war, safety is paramount.²¹

The four previously mentioned standards include inherent warhead design features that prevent accidental or unauthorized nuclear yields, delivery platform design features, and operational procedures that prevent accidental or unauthorized use. These positive measures may take the form of mechanical systems, such as permissive action links that do not allow the arming or firing of a weapon until an authorized code has been entered. They may also involve personnel monitoring systems, such as the Personnel Reliability Assurance Program (PRAP), or the two-person concept. Commanders are responsible for ensuring appropriate systems are in place, as described by appropriate USAF policies. To track the implementation of these positive measures, the USAF certifies its nuclear weapon systems. The USAF's Nuclear Certification Program includes safety design, weapon compatibility, personnel reliability, technical guidance, specific job qualifications, inspections, and Weapons System Safety Rules (WSSR).²²

WEAPON SYSTEM SAFETY RULES

WSSR ensure nuclear weapons are not detonated, intentionally or otherwise, unless authorized. Safety rules apply even in wartime. While commanders may deviate from a specific rule in an emergency, they may not expend a nuclear weapon until an authentic execution order has been received. This has led to the so-called "usability paradox." Nuclear weapons must be "usable enough" so an enemy is convinced they may be rapidly employed in the event of an attack. They must not be so "usable," however, as to allow for unauthorized use due to individual action or mechanical error.

WSSR are implemented through a combination of digital and mechanical means, security procedures, flying rules, and personnel programs. Different weapon systems will have different rules based on their characteristics. Storage and movement of weapons must also be consistent with WSSR. Commanders and operators should follow applicable USAF policies for their weapon system and must ensure non-US personnel adhere to applicable USAF and multinational requirements. One key component of WSSR is preventing the unauthorized use of nuclear weapons. It allows for timely employment when ordered. To this end, all personnel involved in the command, control, and support of nuclear weapons should be knowledgeable of WSSR for their system.

²¹ For additional information on responsibilities and procedures, see DoDM 3150.02, *DoD Nuclear Weapons System Safety Program Manual*.

²² See DAFI 63-125, *Nuclear Certification Program*; AFI 91-101, *Air Force Nuclear Weapons Surety Program*; AFI 31-117, *Arming and Use of Force by Air Force Personnel*; DoDM 5210.42, *Nuclear Weapons Personnel Reliability Program (PRP)*, and AFMAN 13-501, *Nuclear Weapons Personnel Reliability Program*, for additional information.

SECURITY

Nuclear weapons and their components should not be allowed to become vulnerable to loss, theft, sabotage, damage, or unauthorized use. Nuclear units should ensure measures are in place to provide the greatest possible deterrent against hostile acts. Should this fail, security should ensure detection, delay, denial, and defeat of the hostile force before it can seize, damage, or destroy a nuclear weapon, delivery system, or critical components.

Commanders are accountable for the safety, security, and maintenance of nuclear weapons and delivery systems, and the reliability of personnel at all times. Whether on a logistics movement or during an airlift mission, commanders should limit the exposure of nuclear weapons outside dedicated protection facilities consistent with operational requirements. Commanders should ensure nuclear weapons and nuclear delivery systems are maintained according to approved procedures. Commanders are responsible for considering the additional needs incurred if nuclear capabilities are deployed into their operational area.

A security infrastructure exists at bases that routinely handle nuclear weapons. However, weapons and their delivery systems may be moved to other bases to enhance survivability or maybe deployed into a theater. Commanders at such locations should ensure appropriate storage facilities are established and proper security measures are in place. The storage of nuclear weapons on a base not only requires a secure location and additional security personnel, but also impacts other areas such as driving routes, local flying area restrictions, aircraft parking areas, the use of host-nation or contract personnel, and other aspects of operations. Nuclear weapons are most vulnerable in transit or when deployed for use, so particular care must be taken at those times. USAF policies that outline security requirements for nuclear operations should be understood by all appropriate personnel.

Normally, Airmen should neither confirm nor deny the presence or absence of nuclear weapons at any general or specific location. This US policy applies even if a particular location may reasonably be assumed to contain nuclear weapons, such as a missile launch facility or a bomber base. The goal of this policy is “to deny militarily useful information to potential or actual enemies, enhance the effectiveness of nuclear deterrence, and contribute to the security of nuclear weapons, especially against the threats of sabotage and terrorism.” Only two exceptions exist: (1) The DoD Incident Commander (IC) is “required to confirm the presence of US nuclear weapons or radioactive nuclear components in the interest of public safety if the public is, or may be, in danger of radiation exposure or other danger posed by the weapon” and (2) The DoD IC “may confirm or deny the presence of US nuclear weapons to reduce or prevent a widespread public alarm.”²³

²³ See DoDM 3150.08, *Nuclear Weapon Accident Response Procedures*, for additional information.

RELIABILITY

The USAF employs positive measures to ensure the reliability of its nuclear weapon systems and personnel to accomplish the mission. Reliability is also a product of the system's safety features, including safety design, weapon compatibility, personnel reliability, technical guidance, specific job qualifications, and nuclear technical inspections. Independent inspections and staff assistance visits are also an integral part of maintaining nuclear surety.

WEAPON SYSTEM RELIABILITY

Through sustainment, testing, and modernization, the USAF ensures the reliability of nuclear weapon systems. The USAF engages the Department of Energy's National Nuclear Security Administration and other government agencies to ensure nuclear warheads and related interfaces continue to meet USAF warfighting requirements. The USAF continues to provide essential leadership of interagency reliability groups to include test planning, interface requirements and performance, and warhead design reviews.

INDIVIDUAL RELIABILITY

Commanders ensure only trained, certified, and reliable people have access to nuclear weapons, delivery systems, and C2 systems. PRAP is used to initially qualify, certify, and then monitor personnel assigned to nuclear operations tasks throughout their assignment. Commanders and PRAP ensure only those persons whose behavior demonstrates integrity, reliability, trustworthiness, allegiance, and loyalty to the US are allowed to perform duties associated with nuclear weapons. The USAF also employs techniques such as the two-person concept in all nuclear operations to ensure compliance with established procedures. The two-person concept requires the presence at all times of at least two authorized persons, each certified under PRAP, knowledgeable in the task to be performed, familiar with applicable safety and security requirements, and each capable of promptly detecting an incorrect act or improper procedure with respect to the task to be performed.

REFERENCES

All websites accessed 4 August 2025.

US AIR FORCE DOCTRINE: <https://www.doctrine.af.mil/>

- ★ AFDP 3-0, [*Operations*](#)
- ★ AFDP 3-0.1, [*Command and Control*](#)
- ★ AFDP 3-02, [*Strategic Attack*](#)
- ★ AFDP 3-36, [*Air Mobility Operations*](#)
- ★ AFDP 3-40, [*Counter Weapons of Mass Destruction \(WMD\) Operations*](#)

JOINT DOCTRINE

- ★ JP 3-0, [*Joint Campaigns and Operations*](#)
- ★ JP 3-11, [*Operations in Chemical, Biological, Radiological, and Nuclear Environments*](#)
- ★ JP 3-40, [*Joint Countering Weapons of Mass Destruction*](#)
- ★ JP 3-41, [*Chemical, Biological, Radiological, and Nuclear Response*](#)
- ★ JP 3-72, [*Joint Nuclear Operations*](#)

MISCELLANEOUS PUBLICATIONS

- ★ [*Treaty of Mutual Cooperation and Security Between Japan and the United States of America and the United States of America*](#)
 - ★ [*Mutual Defense Treaty Between the United States and the Republic of Korea*](#)
 - ★ [*North Atlantic Treaty*](#)
 - ★ AFI 13-500, [*Air Force Nuclear Mission Responsibilities*](#)
 - ★ AFI 13-550, [*Air Force Nuclear Command, Control, and Communications \(NC3\)*](#)
 - ★ DAFI 91-101, [*Air Force Nuclear Weapons Surety Program*](#)
 - ★ DAFI 63-125, [*Nuclear Certification Program*](#)
 - ★ DAFI 31-117, [*Arming and Use of Force by Air Force Personnel*](#)
 - ★ DAFMAN 13-501, [*Nuclear Weapons Personnel Reliability Program \(PRP\)*](#)
 - ★ DoD Directive 3150.02, [*DoD Nuclear Weapons Surety Program*](#)
 - ★ DoDM 3150.08, [*Nuclear Weapon Accident Response Procedures*](#)
 - ★ DoDM 3150.02, [*DoD Nuclear Weapon System Safety Program Manual*](#)
 - ★ DoDM 5210.42, [*Nuclear Weapons Personnel Reliability Program*](#)
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